FORESTS FOR PEOPLE MORE THAN YOU CAN IMAGINE!

LEVEL 3

THANKS To The TREES In My Life

Have you ever thought about what life might be like without trees?

Just think about the last hour. Where have you been? What have you been doing? Chances are that in just one hour you have used several things made from trees in some way. There are many things that come from trees that you can't see or maybe have not thought about.

Have you ever heard the term "**ecosystem services**?" Ecosystem services are those amenities that healthy natural areas provide us everyday. What do you think ecosystem services might be? Examples include clean air, clean water, beautiful landscapes, healthy soil, places for wildlife to live, and places to do outdoor activities. An ecosystem is a complex community of plants, animals and natural elements like soil and air that exist together and depend on each other.

List five things you have used in the last hour that are made from trees.

_____

_____

_____

_____

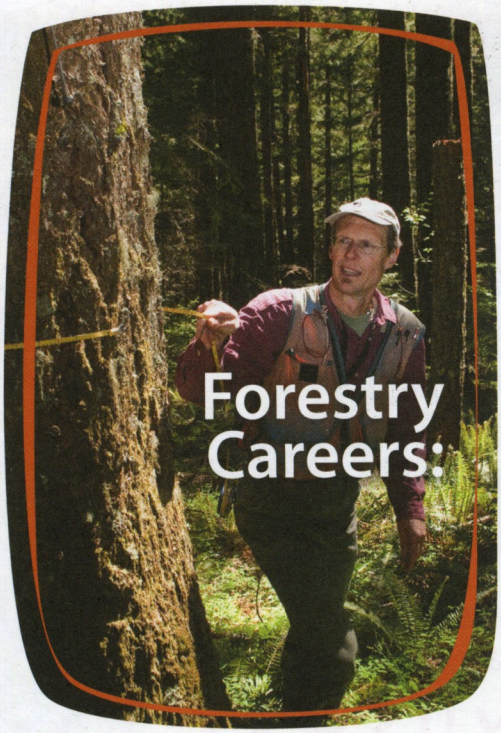
_____

If you have time visit **http://treebenefits.com/calculator/** to calculate the economic and ecological benefits of the trees in your area.

In this picture you will find 24 words.
Each word is something we get from trees and forests or a product made from wood, wood pulp, wood fibers (cellulose) or lignin (the natural glue that holds wood fibers together). Some of them may surprise you!

There are 24 words hidden
in the tree. Find each word in the Word Search Puzzle.
Words can be found frontwards, backwards, horizontally, vertically or diagonally.

T E S S V A Q F S S S M A X W U S W S C
E G K L R X C K D H T S P I A U E T E L
P E C C E E O H A R G A L A T C E G Q E
R R I O H O K M E A A D I O I K Y A H A
A U T Y B R P A T W L O O R C N T V I N
C T S E D O V E E I I T B I W G T Y N W
W I Y E O R C F F P H N T D L A D F Y A
S N E I S I S E F P S E G M R K Y M F T
W R K L R U H J A D I O U G S A L S L E
L U C P F A O S X V L M E E U B C A W R
A F O S B P T H O U N R N R W M D G R L
P P H I J E F M B L E A C H E R S U F C
A R T I R E S U Z U L P P C D T X I R O
N A A V I A M B F X M I Q I Q W S T U K
T Z Z E R W N E G Y X O O A R M W A I R
T O I L E T P A P E R B H S O H F R T I
S R E B B O B G N I H S I F W J Q S Q O
R N V W K S D R A O B L L I B S G N U U
N R Z S Q V V C W I G O I L P M D Q I Q



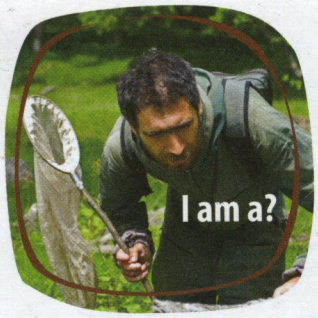


Photo Credit: Dwight Pierce

WHO AM I?

Use the words listed below to identify the careers pictured above and fill in the blanks below:

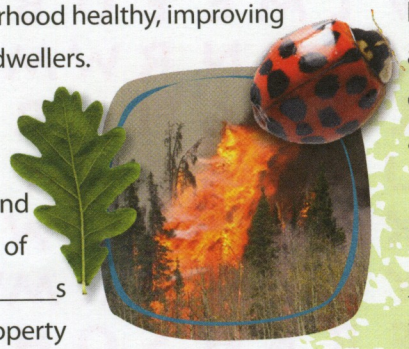
Hydrologist **Wildland Firefighter**
Forest Entomologist **Urban Forester**

FORESTRY CAREER IDEA:

_____s plant trees along city streets and in parks. They bring the benefits of forestry to 80 million Americans. In cities, trees help people in many ways. Trees shade your street, lower air conditioning costs, encourage outdoor play, and can even help you get a better grade on your history test! _____s keep the forests in your neighborhood healthy, improving safety and quality of life for city-dwellers.

FORESTRY CAREER IDEA:

Insects play a critical role in our world. In fact, life depends on insects for producing food. We would be missing a lot of the foods in our daily menu if it weren't for pollinators! _____s study the life cycles and habits of insects, investigate ways to control pests and invasive insects and encourage helpful insects. When hazardous insect infestations occur a _____ sometimes enforces quarantines and regulations to protect forests, ecosystems, and the health of nearby communities.



FORESTRY CAREER IDEA:

Every year forest fires take lives and destroy millions of dollars' worth of property. _____s help protect people, animals, property and entire ecosystems by responding to wildfires. Not only do they suppress the fires, they cut down trees and dig out vegetation to create fire lines so there is nothing left to burn. This career takes strength and endurance. For example, _____s who work for the USDA Forest Service must pass the "Pack Test"—a 3-mile walk in under 45 minutes while carrying a 45 pound backpack!

FORESTRY CAREER IDEA:

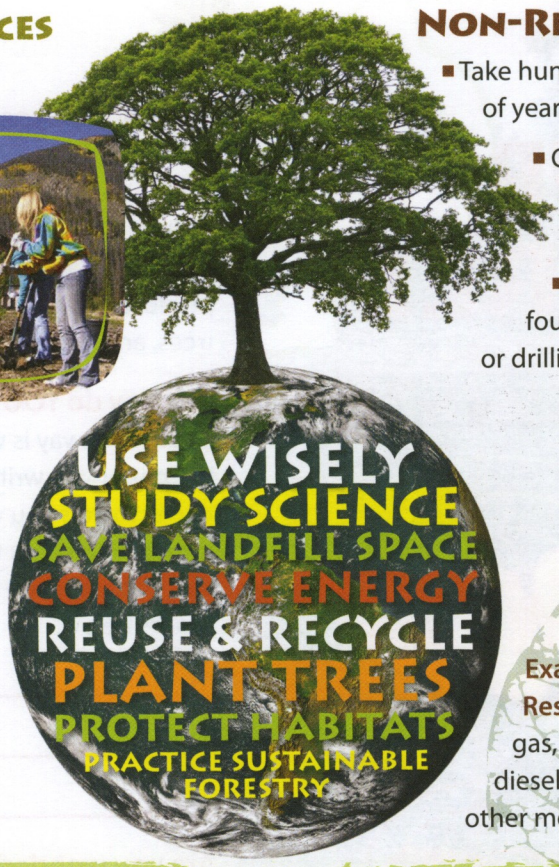
_____s work with water in the forest. They study how water circulates, how water supplies change over time, what causes the changes, and the relationship between water and living organisms in the forest. _____ play an important role in measuring how logging and cutting forests can change the amount and quality of water supplies, predicting how rain and snow fall amounts may cause water shortages, and determining how forest management can improve drinking water quality.

USE IT–RENEW IT

Renewable Resources

- Can be replaced within a few decades or less by natural ecological cycles or human efforts.
- If too much is used and thrown away resources can become limited.
- Trees are renewable resources.
- Forests can be renewed by natural regeneration or by planting trees to replace the ones we use.
- Trees provide clean air, water, healthy soil, beauty and many things we need for daily living.

Examples of Renewable Resources: trees, plants, sunlight, animals, water, wind and biomass.



Non-Renewable Resources

- Take hundreds or even millions of years to form.
- Cannot be produced or grown fast enough to keep up with its consumption rate.
- Most non-renewable resources are found underground and require mining or drilling before they can be used.

Examples of Non-Renewable Resources: soil, minerals, coal, natural gas, petroleum products (oil, gasoline, diesel fuel, propane), uranium and other metals.

Sustainable Forestry- when trees are harvested for human use, new trees are planted or allowed to regenerate naturally.

Sustainable Development- the ability of present generations to meet the economic and environmental needs of the present without compromising the ability of future generations to meet their own needs.

Biomass- organic material from plants and animals containing stored energy from the sun. Plants absorb energy from the sun during photosynthesis. Wood, crops, manure and even some garbage can all be used as a fuel source because of their biomass. The energy in biomass is released as heat for homes or businesses. The heat can also be used to make steam for producing electricity. Biomass can even be converted into ethanol or biodiesel fuel.

Tree SNACK!

Hungry? How about a **"Tree Smoothie"?** You can make a yummy smoothie using ingredients from trees! With help from an adult, place the following ingredients in a blender:

1 cup fresh or frozen peaches
1/2 cup apple or orange juice
1 banana
1 cup ice

Blend until smooth and enjoy!

Use Your Own Tree

Each of US uses approximately one 100-foot-tall Douglas fir TREE in paper and wood products each year. (EPA, 2008) We use trees every day. We eat fruits and nuts from trees; we **sit** on furniture made from trees; we **read** books made from trees; we **breathe** oxygen produced by tree leaves; we live in houses made from trees, and we even **wear** clothing made from trees!

So, how do YOU use a 100-foot-tall tree every year? One way is **wood pulp**. Wood pulp is used to make the **paper** you write on, the **box** a pizza comes in and the **paper towels** you would need if you spilled your milk this morning. Can you think of three more things you use every day that are made from **wood pulp**? Write them in the spaces below.

_____

_____

_____

Are you wondering how you can wear a tree or eat a tree? Check the labels on your clothes. If any of them contain rayon you are wearing a tree! Rayon is made with **cellulose**. Trees are made up of cellulose fibers held together with **lignin**. Cellulose is formed from a chain of a few hundred to several thousand **glucose** molecules. **Termites** love to munch on **cellulose** and can cause a lot of damage to buildings and forests by feeding on them. You eat cellulose too! It is used as a thickener and stabilizer in many foods. For example, when you sprinkle some Parmesan cheese on your spaghetti, you are also sprinkling on some cellulose. Cellulose is used to keep the Parmesan cheese from clumping up in the container. What's your favorite flavor of ice cream? **Cellulose** is used in ice cream to make it thick and creamy.

Lignin is found in the cell walls of trees and gives strength to the wood. **YOU** use **lignin** in many ways. **Lignin** is used in the manufacturing of cement, ceramics, clay bricks and tiles, wax, vitamins, adhesives, particle board, rubber, fertilizers, composts and insecticides. It is even used in the medical field for its antibacterial properties. Look around, do you see any **lignin**?

TAKE A LOOK INSIDE THIS HOME!

Write in the names below of items shown in each room that are made from trees.

KITCHEN	LIVING ROOM	BEDROOM	BATHROOM
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

There's a Fungus Among Us!

In the forest nothing goes to waste—even dead trees. Dead trees end up where they began, in the soil. One of the ways this happens is through decomposers. Decomposers feed on dead organic material and break it down into nutrients that become part of the soil. Fungi are one of the most common decomposers in the forest because they can decompose the lignin in trees. Decomposers are great housekeepers; if it falls on the forest floor they clean it up!

You can become a decomposer by composting. Composting breaks down organic material into humus, a rich soil that is great to use for gardens, landscaping and house plants. **All you need to compost is:**

1. **Green organic waste (high in nitrogen) like fruit and vegetable scraps or yard trimmings.**
2. **Brown organic waste (high in carbon) like wood chips, shredded newspaper or cardboard.**
3. **A small amount of soil which will provide decomposers like fungi, bacteria and worms to get the composting off to a good start.**

You can find all the information you need for composting on the following websites:
www.vegweb.com/composting
www.howtocompost.org
www.epa.gov/epawaste/conserve/rrr/composting/live

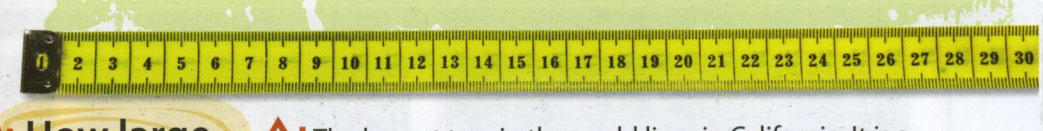
NACD Soil Poster Winner
Lillian Hong
New Jersey
4-6th Grade
Bergen County CD

Our solution has a score of 105. If you can top this score, e-mail us at stewardship@nacdnet.org!

Use ONLY words found in the article, *"There's a Fungus Among Us"* to fill in the puzzle. All words run either from left to right or top to bottom. A word may only be used one time in the puzzle. Nine letters are worth points so try to use those letters as often as you can. After you have filled in the puzzle, calculate your score by adding up the points in each row from left to right. Put the total for each line in the score boxes and add up your puzzle total.

A = 2 B = 6 D = 7 G = 8 I = 3 M = 4 P = 5 R = 1 U = 9

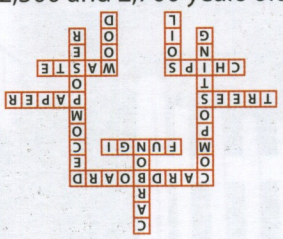
Total:

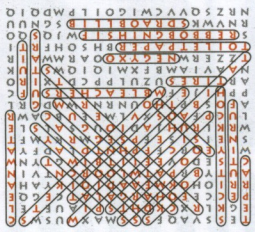


Q: How large is the largest tree in the world?

Maxine worked for NACD for 47 years. That's why we always ask Maxine.

A: The largest tree in the world lives in California. It is a Giant Sequoia tree that stands 275 feet tall and weighs approximately 2.7 million pounds! The tree has a huge trunk that is 95 feet around. That means it is probably larger around than your bedroom! Its name is General Sherman and it is located in the **Giant Forest of Sequoia National Park** in California. The tree is believed to be between 2,300 and 2,700 years old.





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